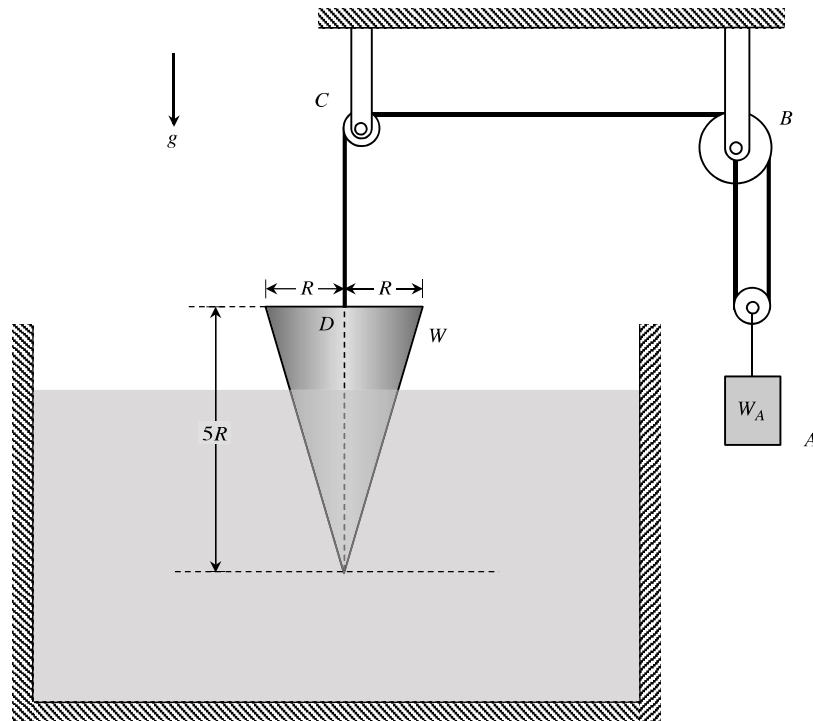


Homework H15.A

Given: A solid cone has a weight of W . The cone is supported through the cable pulley system shown, with the weight of block A being W_A . The cone has also been lowered into a body of water, with the water having a mass density of ρ_w .

Find: What is the minimum weight W_A for which the cone does not sink? Leave your answer in terms of, at most, ρ_w , W and R .



Homework H15.B

Given: Eric is using a foam “pool noodle” as a flotation device as he lounges in his swimming pool.. The pool noodle is a thick-walled tube with dimensions shown below. Eric has a weight of W , whereas the weight of the noodle can be considered to be negligible compared to the water that it displaces. The water in the pool has a mass density of ρ_W . Assume that the volume of the noodle does not change appreciably under Eric’s weight and the buoyancy forces.

Find: As Eric floats in the water of the pool with the noodle completely submerged:

- What is the buoyancy force acting on the noodle?
- What is the buoyancy force acting directly on Eric by the water?

Use the following parameters in your analysis: $L=6\text{ ft}$, $R_o=3\text{ inches}$, $R_i=1\text{ inch}$, $W=185\text{ lb}$ and $\rho_W=1.94\text{ slugs / ft}^3$.

